

**REMARKS**

Claims 1-21, 71 and 72 are pending. No amendments have been made to the application at this time.

Applicant wishes to thank the Examiner for the interview conducted on September 27, 2004, in which the Examiner invited applicant's representative (John W. Knox, Reg. No. 35,776) to set out his remarks about how the claims distinguish over Srinivasan, in writing.

Applicant's representative confirmed with the Examiner that the rejection under 35 U.S.C. § 112, first paragraph has been overcome by the amendments made in the last response.

***Claim rejections – 35 USC 102***

Claims 1-21 and claims 71-72 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Srinivasan et al. (Faster IP Lookups using Controlled Prefix Expansion, pages 1-10, ACM, June 1998) (hereinafter "Srinivasan").

As discussed, Srinivasan appears to disclose a concept they refer to as "controlled prefix expansion" to reduce any set of arbitrary length prefixes into an expanded set of prefixes of any specified sequence of lengths "L1, L2, ...Lk". An example of this concept is provided in Figure 1 of Srinivasan. The arguments set forth in the last response set out reasons why the Srinivasan reference fails to anticipate applicant's claim 1.

During the discussion with the Examiner, it appeared that the differences between the applicant's claim 1 and the Srinivasan reference could be better appreciated by applying applicant's claim 1 to the prefix set used by Srinivasan to show that Srinivasan fails to disclose or suggest many aspects of applicant's claim 1 and to show that the result produced by Srinivasan is quite different from the result produced by applicant's method as recited in claim 1.

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Applicant's representative led the Examiner through an example applying applicant's claim 1 to the Expanded Prefixes shown in Figure 1 of Srinivasan. For simplicity, and to further illustrate that Srinivasan does not disclose the subject matter recited in applicant's claim 1, the following example is provided using the Original prefixes shown in Table 1 of Srinivasan as a starting point. The Examiner will appreciate that application of the method of applicant's claim 1 to either the Original prefixes or the Expanded prefixes of Table 1 of Srinivasan fails to follow any teaching by Srinivasan and illustrates that Srinivasan fails to disclose or suggest each and every element of applicant's claim 1.

The method applied by applicant's claim 1, and the result produced by applicant's claim 1 are entirely different from the method and result of Srinivasan. Applicant's claim 1 recites, "a method of encoding a plurality of pre-defined codes into a search key." Srinivasan discloses "controlled prefix expansion" to reduce any set of arbitrary length prefixes into an expanded set of prefixes of any specified sequence of lengths  $L_1, L_2, \dots, L_k$ . Srinivasan is not concerned with producing a search key, but rather reduction of a set of prefixes to a set comprising prefixes of specified lengths.

In the following example, the method of applicant's claim 1 is applied to the codes that appear on the left side of Figure 1, under the heading "Original". For exemplary purposes, the codes on the left side of Figure 1 of Srinivasan are considered to correspond to the "pre-defined codes" recited in applicant's claim 1.

Applicant's claim 1 refers to "possible bit combinations of a bit string having a length equal to or less than the longest predefined code in said plurality of codes". Applied to the Srinivasan codes, the longest predefined code is 1000000, which has 7 bits and therefore the possible bit combinations of a bit string of this length is  $2^7 - 2$  bit positions = 254 bit combinations. (See

applicant's specification beginning at p. 12, line 20 for an implementation of this).

Further, according to applicant's claim 1, each of these bit combinations is associated with a respective bit position in a PNBA. See applicant's Claim 1: "producing a PNBA having a plurality of bit positions corresponding to possible bit combinations ...".

Further, according to applicant's claim 1, the "bit positions are arranged by the lengths of said possible bit combinations and by numeric value of said possible bit combinations". In this example, of the 254 bit positions of the PNBA, this means that the first bit position would correspond to the Srinivasan prefix 0, the second bit position would correspond to the Srinivasan prefix 1, the third and fourth bit positions would correspond to the possible bit combinations 00 and 01 which don't correspond to any of the original Srinivasan prefixes, the fifth bit position would correspond to the Srinivasan prefix 10, and so on.

Sub-paragraph b) of applicant's claim 1 recites: "setting bits active in bit positions which correspond to bit combinations of said possible bit combinations identified by said pre-defined codes." The possible bit combinations identified by the pre-defined codes are the original Srinivasan prefixes: 0, 10, 111, 11001, 1, 1000, 100000, and 1000000. Therefore, according to sub-paragraph b) of claim 1, the bit positions in the PNBA that correspond to those Srinivasan prefixes are set active.

The result is a PNBA having 254 bit positions, of which only the eight positions corresponding to the original Srinivasan prefixes are set active (the remaining bit positions being set inactive). The so formed PNBA may act as a search key, which is the result sought by the method recited in applicant's claim 1.

Applicant's representative understood the Examiner to consider the original prefix 1\* of Srinivasan to be equivalent to the PNBA of applicant's claim 1, where the "1" is in a bit position and corresponds to all the possible bit combinations that follow, due to the "\*" indicating "don't care" bits after the "1" in this prefix, and where the "don't care" bits could be any combination of bits. However, this and the remaining prefixes set forth in Srinivasan cannot correspond to the PNBA recited in applicant's claim 1, because the longest predefined code would be 1000000, having 7 bits, for which there would be 254 possible bit combinations, in which case the PNBA could not have just 1 bit position, but would have to have 254 bit positions corresponding to the possible bit combinations of the bit string having a length equal to or less than 1000000, the longest predefined code. Since the bit positions in the prefixes of Srinivasan do not correspond to such possible bit combinations, it cannot be said that bits in such bit positions are set active to correspond to the predefined codes, i.e. to correspond to other prefixes in the original set of prefixes proposed by Srinivasan.

There is nothing in Srinivasan that corresponds to the PNBA recited in applicant's claim 1. Srinivasan fails to describe or suggest a separate array in which bit positions of that array correspond to possible combinations of a bit string having a length equal to or less than the longest predefined code in the plurality of predefined codes. Furthermore Srinivasan fails to disclose that such bit positions should be arranged according to the lengths of said possible bit combinations and by numeric value of said possible bit combinations to which they correspond. Furthermore Srinivasan fails to disclose or suggest "setting bits active in bit positions which correspond to bit combinations... Identified by said pre-defined codes."

From the foregoing, applicant respectfully submits that Srinivasan fails to disclose or suggest each and every element recited in applicant's claim 1, in the combination recited in applicant's claim 1, and therefore, Srinivasan fails to satisfy the requirements for a finding of anticipation of claim 1 under 35

U.S.C. § 102(b). Applicant therefore respectfully requests that the rejection of claim 1 under 35 U.S.C. § 102(b) be withdrawn.

Claims 11 and 12 are the only other independent claims in this application and these claims recite limitations similar to those recited in claim 1. Therefore, Srinivasan fails to satisfy the requirements for a finding of anticipation of claims 11 and 12, for reasons including those presented above in connection with claim 1. Applicant therefore respectfully requests that the rejection of claims 11 and 12 under 35 U.S.C. § 102(b) be withdrawn.

Since Srinivasan fails to disclose the above indicated elements of claim 1, no meaningful comparison of the features of Srinivasan can be made to the elements of the remaining claims dependent on claim 1 or any of the remaining independent claims. Consequently, applicant respectfully submits that Srinivasan fails to anticipate claims 2-10, 13-21, 71 and 72 due to their dependence upon one of the independent claims which have been shown to distinguish over Srinivasan, and due to the additional subject matter recited in such claims.

Claims 1-21 and 71-72 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Srinivasan (U.S. Patent No. 6,011,795). The first named applicant on this patent is Varghese, and the second named applicant is Srinivasan. The Examiner has referred to both the above mentioned literature reference and the patent reference as "Srinivasan". Applicant's representative and the Examiner discussed the possible confusion that could arise by calling both the literature reference and the patent reference by the same name and have agreed to refer to the patent reference as "Varghese". In fact, the applicant's understanding of the rejection of claim 4 appears to have resulted from this confusion.

Applicant's representative and the Examiner agreed that the Varghese reference appears to disclose the same subject matter as the Srinivasan reference and it appears that the Varghese reference is the patent that

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resulted from the work described in the Srinivasan reference. It was also agreed that the Varghese reference adds nothing different from the disclosure provided by the Srinivasan reference, and therefore the disclosures of Varghese and Srinivasan may be considered to disclose the same subject matter.

In view of the remarks made about the Srinivasan reference above, the same remarks apply in respect of the Varghese reference. Therefore, the Varghese reference fails to satisfy the requirements for a finding of anticipation of claims 1-21, 71 and 72, for reasons including those set forth in connection with the Srinivasan reference above. Applicant therefore respectfully requests that this ground of rejection be withdrawn.

Applicant respectfully requests further favorable consideration of the application.

Respectfully submitted,



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